



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

PRELIMINARY ISSUE

D5611-1

Job Sheet 183489

Accounting Job RD17-1048-01



Part No: D5611-1

Job Qty: 1 ea

Part Name: EC130 Skidtube



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 9/19/18

Job Tracking No:

Due Date: 9/28/18

Created By: Marie Lajeunesse

Type: R+D

Description:

Note: D5611 REVA.10 IPP REV:A 18.06.20 NEW ISSUE DD VERF:JFS

Ship Via:

POSITIVE RECALL

EFFECTIVE 21 DAS AUTH 21

RELEASED 9 9-89 DATE 18-10-14

Rev A
5018-817

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
110	Purchasing	1 pcs		9/28/18	0.00	0.00	Purchasing		SEP 19 2018
120	Packaging	1 pcs		9/28/18	0.00	0.00	Packaging2		SEP 19 2018
130	QC	1 pcs		9/28/18	0.00	0.00	QC6		38
140	Packaging	1 pcs		9/28/18	0.00	0.00	Packaging3-1		9-89
150	QC21-FG	1 Ea		9/28/18	0.00	0.00	QC21		SEP 26 2018

Part Op 110 - Issue P/O to Parker Fab: 40303. Manufacture D5611-1 as per dwg (Bend,Swag, Remove excess material
Descriptions: after bending) **Ship extrusion D6031-120** ***AS PER DWG NOTE 10, EXTREME CARE MUST BE TAKEN TO
PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE
FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS.*** Material release note is required
120 - Ensure material release note is attached

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6031-120	Tube, Seamless	1 Ea (1 ea)	110-Purchasing	5111356
D5611-1P	EC130 Skidtube	1 pcs (1 ea)	120-Packaging	5111354

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
110-Purchasing	D6031-120	1	40	0
120-Packaging	D5611-1P	1	0	0

Part Specifications



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

could not be found.

Plex 9/19/18 7:43 AM Dart.lajeunesse.marie

Container No: S111357



Part: D5611-1

Job No: 183489

Serial No/Batch: S111357

Revision: A10

Inspector:

Exp Date:

Instructions:

Date: 09/19/18

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

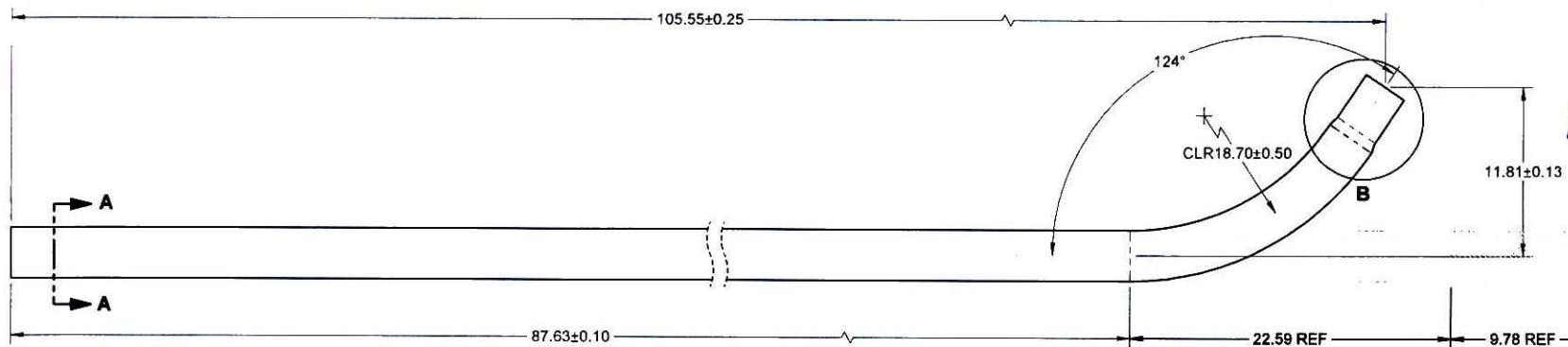
QA Closed: _____ Date: _____ Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width: 100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>				Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐																		
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐																		
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐																		
Large Fab ☐	Composite ☐	Supplier ☐																			

Date :	Step #:	QTY Effective :	MRB (QS1042) Approval
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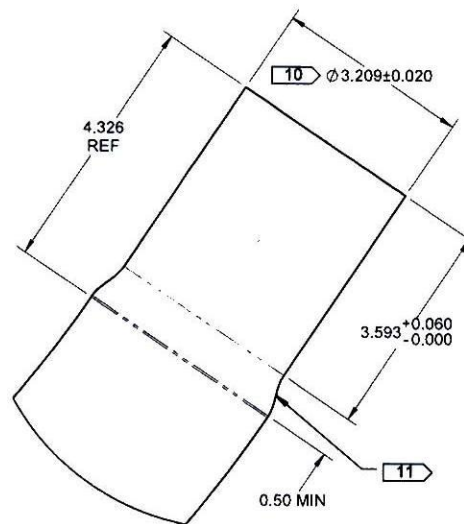
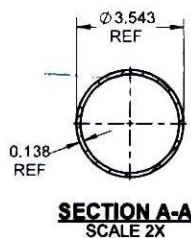
Description Work Order Deviation	Disposition	
		Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____

Root Cause			FAULT CATEGORY		
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____			
Misidentified ☐	Past Due ☐				



D5611-1 EC130 SKIDTUBE

Accepted by
N.O.



**DETAIL B
SCALE 4X**

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 183489 MJS
1805-19

NOTES:

- 1) MATERIAL: MAKE FROM D6031-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.41lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.
- 10) SWAGE 3.593 +0.060/-0.000 AT THE BENT END OF THE TUBE TO Ø3.209+/-0.020
- 11) SWAGED TRANSITION MUST BE SMOOTH, GRADUAL, AND WITHOUT VISIBLE DISCONTINUITIES

PRELIMINARY ISSUE

A		NEW ISSUE	ZF		18.05.07
REV.		DESCRIPTION	BY	DATE	
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D5611 TITLE EC130 SKIDTUBE			
DRAWN	ZF				
CHECKED	NO				
MFG. APPR.	DP				
APPROVED					
DE APPR.					
DATE	18.05.07				
				REV. A10	SHEET 1 OF 1
				SCALE	NTS

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Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO040303**

Supplier: PAR005-VU
Parker Fabrication Inc
501 East Courtland
Morton, IL 61550-9043 USA
Phone: 309-266-8413
Fax: 309-266-7231

PO No: PO040303
PO Date: 6/22/18
Due Date: 9/21/18
Purchase Order Revision: 2
Revision Date: 9/13/18
Ship-To Contact: Hemmerich, Steven
Phone: 613-632-5200 Ext: 281
shemmerich@dartaero.com

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Pymt Terms: Net 30
Freight Terms: Collect
Special Comments:

Items													
Line Item	Job	Part	Supplier Part No	Item No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
1		D5611-1P			EC130 Skidtube First Article Inspection. Expedite charges included in price. Forward quality docs to buyer prior to shipment	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X SEP 19 2018 SEP 19 2018 SEP 19 2018 SEP 19 2018 SEP 19 2018 SEP 19 2018 SEP 19 2018													
Line Item Note					Advance notice required for Quality audit.								
					w/o183486	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
					w/o183487	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
					w/o183488	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
					w/o183489	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
					w/o183490	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
					w/o183491	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
					w/o183492	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
Sub Total:									8	0	8		\$4,022.00
												Grand Total: \$4,022.00	

Order Notes

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 9/19/18 8:08 AM dart.hemmerich.steven



Parker Fabrication, Inc.
501 East Courtland
Morton, IL 61550-9043

Ph: 309.266.8413

Fax: 309.266.7231

st 2
Pack List

Number: **119663**

Date: 17-Sep-18

Dart Aerospace
1270 Aberdeen St
Hawkesbury, ON K6A 1K7
Canada

Ship To

Steven Hemmerich
Dart Aerospace
1270 Aberdeen St
Hawkesbury, ON K6A 1K7
Canada

Ph: 1 613 632-5200

Ph: 1 613 632-5200

Terms		Ship Via	
		Freight Collect	
Quantity	Description	Rev:	
8 ea	Part: EC130SKID ✓ EC130 Skidtube rev. A10 SO: 69748	PO: PO040303 ✓	Line: 001
4 ca	Part: EC130FWD EC130 Fwd X Tube rev. A9 SO: 69748	PO: PO040303	Line: 002
Thank you for your business!			

DAS
38
9-89



Certificate of Conformance (CoC)

Form F-4003
Page 1 of 1
Last Revised:
3/09/2018

Supplier Name: Parker Fabrication
Supplier Number: _____
Part Description: EC130 Skidtube

Part Number: D5611
Drawing Number: D5611 Revision: A10

Purchase Order #: PO040303
Quantity: 8
Serial Number(s): 207294 (if applicable)
Lot/Heat Number: S078761 (if applicable)

All technical requirements of the contract are satisfied. Quality and performance are in accordance with the contract, the specifications, and all references and associated contractual drawings and documents.

I, as a supplier to Dart Aerospace LTD, acknowledge and certify the material covered under this document is produced in accordance with the following:

- ☒ All Contractual "Flow Down" Requirements
- ☒ Supplier Standards Guide
- ☒ Global Supplier Quality Manual
- ☒ Product Conformance
- ☒ Free of Counterfeit Material

(Acknowledge by marking the boxes)



Signature

Quality Manager

Title

9/17/2018

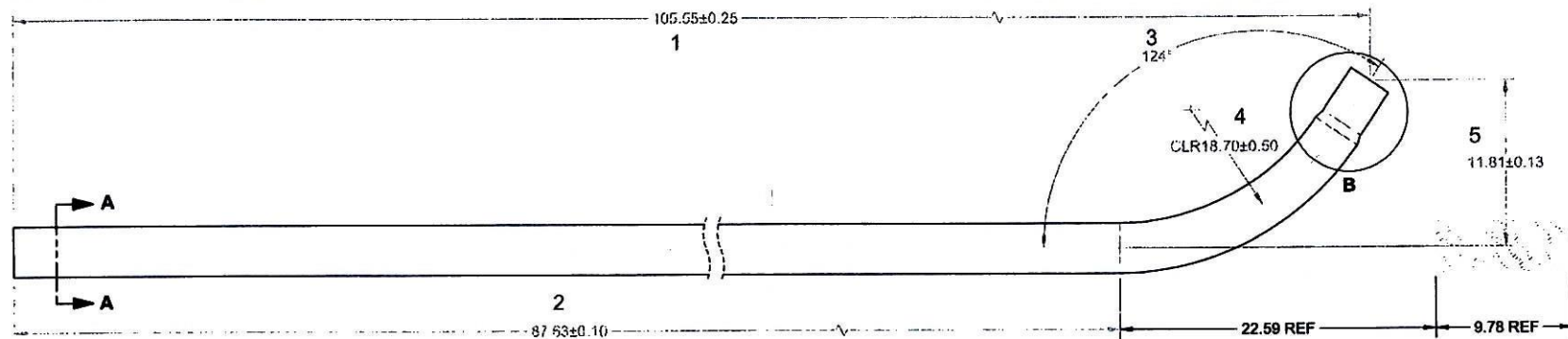
Completion Date

This certifies the parts/items/materials identified above conform to all applicable drawings and/or specifications as evidenced by reports or other documentation on file and all other purchase order and quality requirements have been met.

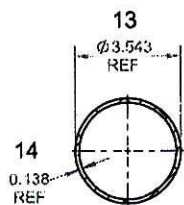
DAS
38
9-89

Production Part Approval Dimensional Test Results

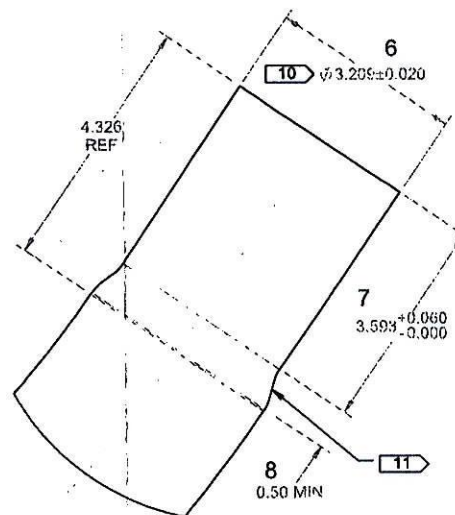
[illegible]



D5611-1 EC130 SKIDTUBE



SECTION A-A
SCALE 2X



DETAIL B
SCALE 4X

NOTES:

- 1) MATERIAL: MAKE FROM D6031-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.41lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.
- 10) SWAGE 3.593 ± 0.060/-0.000 AT THE BENT END OF THE TUBE TO Ø3.209 ± 0.020
- 11) SWAGED TRANSITION MUST BE SMOOTH, GRADUAL, AND WITHOUT VISIBLE DISCONTINUITIES

PRELIMINARY ISSUE

REV.	NEW ISSUE	DESCRIPTION	ZF	DATE
DESIGN	NO			18.05.07
DRAWN	ZF			
CHECKED	NO			
MFG. APPR.	DP			
APPROVED				
DE APPR.				
DATE	18.05.07			

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. **D5611**
REV. **A10**
SHEET 1 OF 1
SCALE
NTS

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Entered: _____ Date: _____

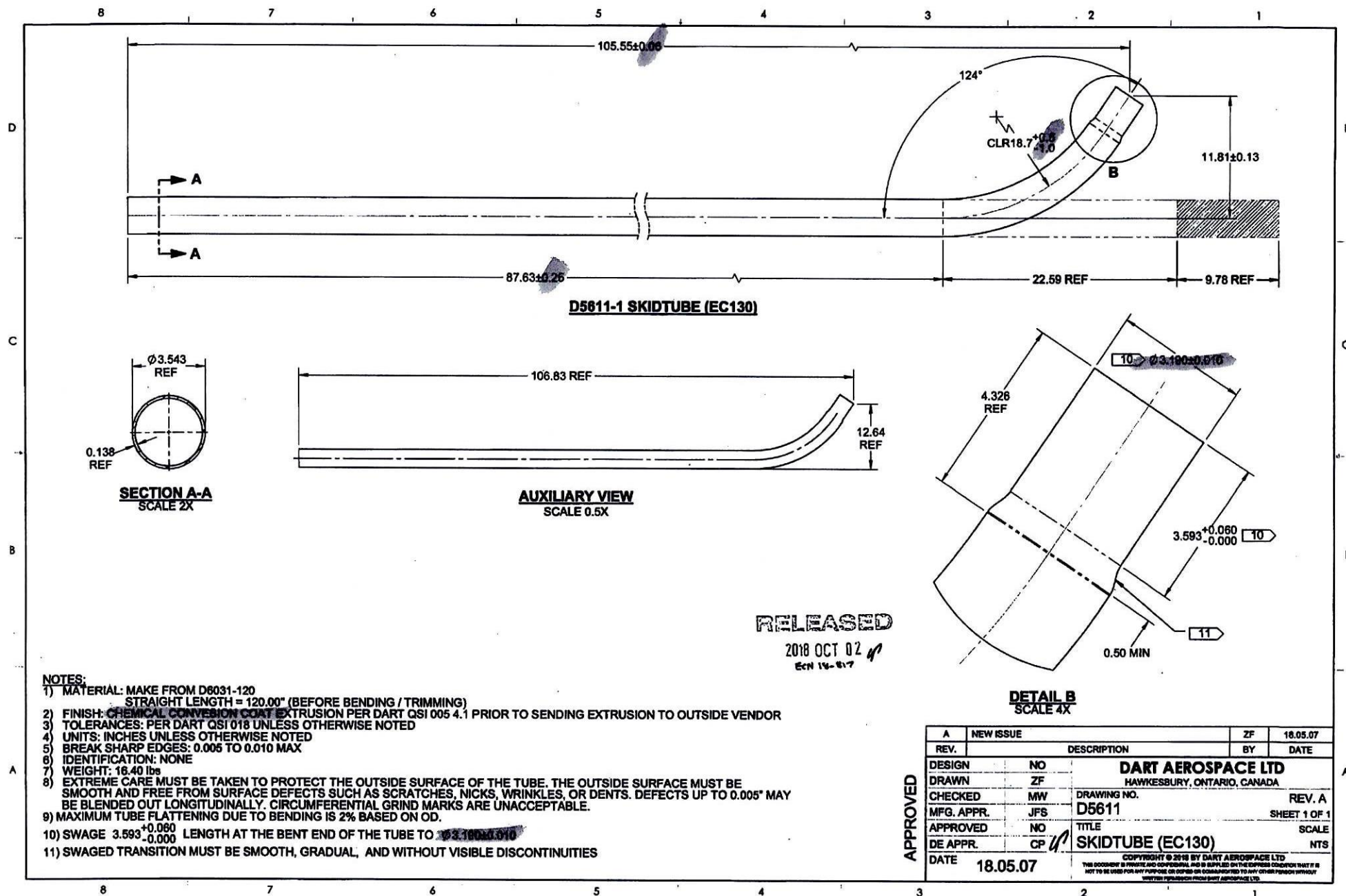
WORK ORDER NON-CONFORMANCE / ROUTE UPDATE



NCR No. _____

Route update only ☐

Job: _____ Part No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒		DEPARTMENT/PROCESS Skid-tube ☐ Cross tube ☐ Eng. (Non-AW) ☐ Engineering ☒ Machining ☐ Small Fab ☐ Prod. Eng. Coord. ☐ Water Jet ☐ Large Fab ☐ Finishing ☐ Rec/Store/Packaging ☐ Supplier Quality ☐																															
Date : 18/10/3		Sequence #:		QTY Affected :		MRB (QSI042) UP DAS 12 18/10/3 9-89																													
Description Work Order Deviation				Disposition																															
D5611-1 WAS SUPPLIED UNTRIMMED, BOTH AFT AND FWD ENDS. <u>SWAGE O.D.</u> is out of tolerance due to design change after manufacture.				FAI DEVIATIONS ARE DUE TO LACK OF TRIMMING. PART WILL BE TRIMMED ON NEXT WORK ORDER. <u>Acceptable</u> Swage O.D. is acceptable for testing. As long as part assembles, there will be no effect on the test.																															
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Preservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐				FAULT CATEGORY <table border="0"> <tr> <td>☐ Pressure/Forced</td> <td>☐ Contamination</td> <td>☐ Power Loss/Surge</td> <td>☐ Positioned Wrong</td> </tr> <tr> <td>☐ Bending</td> <td>☐ Misaligned/off center</td> <td>☐ Folio/Program</td> <td>☐ Outside Tolerance</td> </tr> <tr> <td>☐ Crushing</td> <td>☐ BOM/Route</td> <td>☐ Grain Direction</td> <td>☐ Drawing</td> </tr> <tr> <td>☐ Cracks</td> <td>☐ Broken/Damage/Defect</td> <td>☐ Weld</td> <td>☐ Finish</td> </tr> <tr> <td>☐ Crimp/Kink/Ripple/Wave/Twist</td> <td>☐ Incomplete/Unclear Instructions</td> <td>☐ Wrong Stock Pulled</td> <td>☐ Part Lost/Missing</td> </tr> <tr> <td>☐ Marks/Chatter</td> <td>☐ Drill Holes</td> <td>☐ Out of Sequence</td> <td>☐ Misread</td> </tr> <tr> <td>☐ Mislabeled</td> <td>☐ Fit/Function</td> <td>☐ Off-set/Set-up</td> <td></td> </tr> </table>				☐ Pressure/Forced	☐ Contamination	☐ Power Loss/Surge	☐ Positioned Wrong	☐ Bending	☐ Misaligned/off center	☐ Folio/Program	☐ Outside Tolerance	☐ Crushing	☐ BOM/Route	☐ Grain Direction	☐ Drawing	☐ Cracks	☐ Broken/Damage/Defect	☐ Weld	☐ Finish	☐ Crimp/Kink/Ripple/Wave/Twist	☐ Incomplete/Unclear Instructions	☐ Wrong Stock Pulled	☐ Part Lost/Missing	☐ Marks/Chatter	☐ Drill Holes	☐ Out of Sequence	☐ Misread	☐ Mislabeled	☐ Fit/Function	☐ Off-set/Set-up	
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☐ Mislabeled	☐ Fit/Function	☐ Off-set/Set-up																																	
Other/Details:				QC / QA Coordinator DAS 9 13-10-04 9-89																															



A		NEW ISSUE		ZF	18.05.07
REV.		DESCRIPTION		BY	DATE
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA			
DRAWN	ZF				
CHECKED	MW	DRAWING NO. D5611		REV. A	
MFG. APPR.	JFS			SHEET 1 OF 1	
APPROVED	NO	TITLE SKIDTUBE (EC130)		SCALE	
DE APPR.	CP			NTS	
DATE	18.05.07	COPYRIGHT © 2018 BY DART AEROSPACE LTD		THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR ON ANY EQUIPMENT TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	